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Editor(s): Aksnes, A; Amzajerdian, F

Title: Non-selective optical wavelength-division multiplexing devices based on a-SiC:H multilayer heterostuctures

Source: Materials and Devices for Laser Remote Sensing and Optical Communication, 1076: 187-192 2008

Book series title: MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS

Language: English

Document Type: Proceedings Paper

Conference Title: Symposium on Materials and Devices for Laser Remote Sensing and Optical Communication held at the 2008 MRS Spring Meeting

Conference Date: MAR 25-27, 2008

Conference Location: San Francisco, CA

Conference Sponsors: Mat Res Soc.

Keywords: Non-selective Optical; Multiplexing Devices; a-SIC:H; wavelength-division

Abstract: In this paper we present results on the optimization of multilayered a-SiC:H heterostructures for wavelength-division (de) multiplexing applications. The non selective WDM device is a double heterostructure in a glass/ITO/a-SiC:H (p-i-n) /a-SiC:H(-p) /a-Si:H(-i')/a-SiC:H (-n')/ITO configuration. The single or the multiple modulated wavelength channels are passed through the device, and absorbed accordingly to its wavelength, giving rise to a time dependent wavelength electrical field modulation across it. The effect of single or multiple input signals is converted to an electrical signal to regain the information (wavelength, intensity and frequency) of the incoming photogenerated carriers. Here, the (de) multiplexing of the channels is accomplished electronically, not optically. This approach offers advantages in terms of cost since several channels share the same optical components; and the electrical components are typically less expensive than the optical ones. An electrical model gives insight into the device operation.

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Publisher: Materials Reserch Society

Publisher Address: 506 KEYSTONE DRIVE, WARRENDALE, PA 15088-7563 USA

ISSN: 0272-9172

ISBN: 978-1-60511-046-2

ISI Document Delivery No.: BIO96